U. S. TREASURY DEPARTMENT
HENRY MORGENTHAU, Jr., *Secretary*
U. S. PUBLIC HEALTH SERVICE
THOMAS PARRAN, *Surgeon General*

Syphilis Control in Industry

By

R. R. SAYERS
Senior Surgeon
United States Public Health Service

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"Blood tests should be a part of the routine physical examination for employment and of periodic reexamination. A positive result should not be ground for the rejection of applicants or the discharge of employees. Treatment may be properly insisted upon, especially in jobs hazardous to the worker or to others.

"Unless highly competent treatment can be arranged through private physicians, public or private clinics, at prices ordinary wage earners can afford, the industrial medical service should treat syphilis."—"Syphilis is Bad Business," by Surgeon General THOMAS PARRAN. Dun's Review, August 1937.

A new folder, "Syphilis, Its Cause, Its Spread, Its Cure," has recently been issued by the United States Public Health Service. This pamphlet contains information and instructions for physicians to give to patients, supplemented with pictures which tell the story of the care of syphilis. For a limited time small firms, labor unions, and other organizations may secure up to 25 copies free from the United States Public Health Service for use in syphilis education programs. Copies may be purchased in quantity from the Superintendent of Documents, Government Printing Office, Washington, D. C., for $1 a hundred.

SYPHILIS CONTROL IN INDUSTRY[1]

By R. R. SAYERS, *Senior Surgeon, United States Public Health Service, Division of Industrial Hygiene, National Institute of Health*

At the turn of the century we were ignorant of the essential problems involved in the control of syphilis. In 1905 Schaudinn discovered the organism; in 1907 the researches of Bordet and Wassermann gave us the complement fixation test; in 1910 Ehrlich performed his 606th experiment of a series and gave us salvarsan. In the short space of 6 years the new methods for diagnosing and treating syphilis were created.

Surgeon General Parran has pointed out that the first large scale experiment in the use of these weapons was an industrial experiment. It was war time. America's biggest industry—the war industry—was hiring more than 5 million military employees. An army needs health, and the new instruments against syphilis were used in a demonstration of military medicine that at the close of hostilities became also a popular campaign. That campaign unfortunately was abortive. As Dr. Parran pointedly suggested in his recent address before the American Medical Association, "We apparently thought that the spirochete was demobilized with the army."

In the years since that time the technique of the darkfield has been improved, the complement fixation has been refined, and the sensitive flocculation tests have added to the accuracy of diagnosis. Within the past half dozen years the Cooperative Clinical Group Studies have given to the treatment of syphilis a precision which it did not have before. During the last 18 months the taboo has been broken; syphilis is now discussed publicly.

Thus we have medical weapons in a highly perfected state. We have public acceptance and support. The next question is, Is the campaign against syphilis going to be a 9 days' wonder, another thing that "something ought to be done about," or will it be translated into definite programs?

Medical historians will judge the fight on syphilis by its results. Those results can be measured only in terms of how many patients come to treatment, how many patients who come to treatment get ade-

[1] Presented before the American Public Health Association, New York City, October 6, 1937.

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quate treatment, and how well also the existing medical facilities contribute to those results.

In this fight public health authorities can expect the cooperation of industrial medical services. Letting syphilis go on is bad economics; industry is alive to economics. Syphilis is a killer, as the Surgeon General has declared. More than 1,000,000 years of life expectancy are lost each year to syphilitic deaths. Syphilis is the cause of aneurysm, paresis, tabes dorsalis, and cardiovascular disease, and is a threat to the efficiency and safety which are fundamental in the industrial processes. Syphilis, through these diseases, costs America in institutional care between 40 and 50 million dollars every year. Both as a taxpayer and as an employer, industry is interested in all these phases of syphilis. There is no sum which has been suggested for control which approaches the present cost of syphilis to American communities. It has been well said that "the cheapest thing America can do with her million annual cases of syphilis is to cure them."

Some companies, but proportionately not many, have taken steps to meet this problem of syphilis. The Division of Industrial Hygiene of the U. S. Public Health Service recently directed letters to more than 200 industrial surgeons. To quote the summary of those studies as presented in the Surgeon General's book, "Shadow on the Land: Syphilis": "Of 80 companies employing nearly a million persons, only 15 make routine blood tests as part of the preemployment and later periodic examinations. Among a total of 110,675 employees reexamined, 5,313, or 4.8 percent, were positive. Among a smaller number of applicants (21,239) 2.3 percent were positive, indicating that those who know they have syphilis seek employment where no tests are made."

The proportion of the amount of testing done among the railroads is somewhat larger. Fifteen railroads, employing 414,684 of America's million railroad workers, reported that they had examined 119,535 of their employees. Some roads reported that virtually all of their employees had been tested. One railroad reported that it had tested 45,000 employees, another reported 20,000 employees tested, another 16,000, and another 8,000. This interest on the part of the railroads goes back for 15 years. More than 10 years ago the railroad surgeons drew up a recommended program for venereal disease control. Their interest stems in large measure from the importance of the safety factor in railroading.

There are two questions involved in industry's approach to syphilis. The first is the general question of policy. Should blood tests be given? What should industry do to reduce the incidence of syphilis among its workers? What, in general, should be its attitude toward the employee with a positive Wassermann? The Surgeon General,

in his address before the Medical and Surgical Section of the American Railway Association last June, and in his article published in the September issue of Factory, a management magazine, summarized this problem in suggesting—

1. That routine blood tests are desirable for applicants for employment.
2. That routine blood tests are desirable at the time of periodic reexamination of employees.
3. That industry, with its compact organization, will find the development of a vigorous educational program profitable.
4. That industry might extend that educational campaign into the field of prophylaxis.
5. That there is a responsibility upon the industrial medical officer to see that adequate modern treatment is available to employees at prices ordinary wage earners can afford—that if such is not available in private practice or at public clinics, the industrial medical service should itself undertake such treatment.
6. That syphilis must at all times be handled as merely another communicable disease. The privacy of relations between the worker and the medical service should be conducted in the best professional tradition. In ordinary cases it cannot be regarded as ground for the rejection of applicants or for the dismissal of employees, though treatment may be properly required.

The other principal problem is that of applying this general policy to particular workers and in particular types of jobs. What should industry do about the machinist with syphilis, the crane operator with syphilis, the waitress with syphilis, the plant manager with syphilis, and the chairman of the board of directors with syphilis?

One need not search far to conclude that the policies now applied are often hit or miss. I have in mind the policy followed until a short time ago by the United States Civil Service Commission. It did not ask routine blood tests for syphilis from prospective employees. When, however, the fact was discovered that a prospective employee was infected, he was rejected out-of-hand. Expressions of deep solicitude for the retirement funds were made to explain the policy. A real interest in the retirement funds would have suggested that a policy of routine blood tests, plus the requirement of treatment, but without the policy of discharge, would be far more intelligent.

Or take this case from industry: Some months ago a young man applied for a job in an eastern aircraft engine factory. His qualifications as a machinist were found to be high. He was hired. After a week's work he was given a physical examination, which included, as all good physical examinations should, a blood test. His blood test was positive. He was fired.

A few days later he became the patient of a prominent eastern syphilologist. He gave a history of having had a primary chancre

some years before. The doctor whom he consulted treated it with a "powder," probably calomel. When the secondary rash appeared, he had been advised to take baths in a solution of baking powder. This also had disappeared. Until the time of the blood test he had had no knowledge of the true nature of his disease. It may be fairly said that his condition was due to the negligence or ignorance of the "physician" who originally saw the case.

This patient was willing to take treatment, eager to do so. His inability to secure a job, however, jeopardized his ability to pay for such treatment.

The syphilologist protested to the company. He pointed out that, in that stage of the disease, treatment was a definite bar to central nervous system complications and a definite protection from infection. The cure was almost certain. He offered to report from time to time on the progress of treatment. At the time that the last correspondence relating to the case came to the Public Health Service, the syphilologist had not received any reply from the company.

I need hardly say that from the point of view of modern medical science the syphilologist was right, the company was wrong. There was no element of risk involved in this case. By way of contrast it might be worth while to note that, in the routine physical examination given to commercial pilots who fly the planes using the motors that were built in the plant, who have the lives of passengers and the safety of expensive equipment in their hands, the blood test is not included.

Yet *only* the blood test can reveal syphilis in the latent stage.

Or take another case from real life: The wife of a member of our staff was riding home in a nearly empty bus one evening when a talkative woman sitting next to her began to discuss the awful case of her maid. The girl, it seems, had been too insistent about her Thursday afternoons off. She had let slip the fact that she was going to her doctor, and the scandalized housewife discovered that she had been under treatment for syphilis for nearly a year. The housewife, being highly moral and very timid, discharged the maid.

Now, obviously, the woman was not one who was systematic enough to ask a routine blood test in advance. Obviously, too, the maid belonged to that small fraction of syphilitics tenacious enough to continue treatment over an extended period. She was noninfectious and of no danger to anyone; in fact she was far safer than many whose blood test showed negative a week or so before.

This, though not a case of industrial employment, is nevertheless typical of many management decisions with regard to syphilis. It is not dissimilar to the policy of the Civil Service Commission, previously cited. Each of you can probably recall a dozen or more similar cases from your own experience.

These cases are worth citing because they emphasize the need for a careful consideration of syphilis and the job. One can lay down broad policies, but one must exercise administrative judgment within the ambit of those policies in terms of two variables: (1) the particular job, its requirements and responsibilities; and (2) the particular syphilitic, the stage of the disease, and the treatment taken.

When one considers the job, there seem to be four principal sorts of human relationships involved. Three of these concern industry; the other, the individual job, is more or less distinguished by the fact that it is not integrated into a larger enterprise, the job of the farmer, the artist, or the prospector, for example.

Of most obvious concern when one considers syphilis is the *personal contact job*. This group would include the food handlers, the hotel employees, barbers, beauty parlor workers, Pullman porters, matrons, nurses, school teachers, and all whose work brings them into intimate personal relations with other people. It is these persons who present the greatest possibility of chance infection.

Considered in terms of the various stages of the disease, it is the early stage that is of most importance. The latent syphilitic is not likely to transmit an accidental infection. Though a paretic cook may spoil one evening's broth, he is not likely to pass his syphilis on to anyone else. But the primary and secondary stages, when chancres, skin rashes, or mucous patches appear, are important. Anyone who has responsibility for this group of workers must keep high his index of suspicion whenever a skin lesion of any kind appears. The darkfield should be freely employed to discover the early cases in that 10- to 20-day period of the first chancre, before the blood turns positive.

The second job group in which syphilis is of importance to industry is the *job of responsibility*. The air pilot or the engineer, responsible for the safety of passengers, the operator of switches or interlocking systems, the train dispatcher, the crane operator, the executive with his financial responsibility for the management and finances of the enterprise, all would fall within a group which presents no extraordinary opportunity for accidental infection, but in which mental or physical failure under stress may have disastrous consequence to the safety of their fellow workers, the public, themselves, the equipment, or even the company.

Among various stages of the disease the first stage has only its public health importance. It is the latent stage and the incipient later stages which concern us. The need of periodic blood tests and of insistence on treatment which will arrest the disease before it enters the central nervous system or threatens an internal organ with aneurysm, is evident. Only the blood test will find syphilis at this stage. You are dealing, moreover, with an extremely valuable group

of employees. These complications come in late middle life. The longer their seniority and training, the more valuable they are likely to be; the higher they have risen in rank and leadership, the sounder is the industrial policy which makes their cure a responsibility of industry.

There is another sort of job group, which I might call, for want of a better term, the *routine job*. Here will fall many of the operators of individual machines, janitors, helpers, and clerks. On the one hand they present no unusual problem of chance infection; on the other hand no physical or mental failure would be of great consequence to the work, their fellows, or the patrons of the company.

This group of workers presents a problem which is present in the two classes mentioned before. I did not emphasize this, because hazards of infection and safety were dominant considerations. If they have syphilis, they are sick men. That fact must not be obscured by the fact that they are not bedridden. If they have early syphilis, they have an infectious skin lesion which may be passed either venereally or by chance contact to others and will almost certainly be passed to their wives and children. If they have latent syphilis, however complete the apparent peace they have made with the spirochete, there are data to indicate that they are not the efficient employees they would be without latent syphilis. It is true that there are no accident statistics to cover this point. One can find countless cases to illustrate the slow healing of wounds or bone structure in the case of syphilitics. One can find compensation claims paid for injuries which better medical advice would have set down to syphilitic infection rather than accident. How large this sort of thing bulks in the annual budget of a large industrial organization may be a matter of dispute. It is certain, however, that half a dozen such cases a year would amount to a much larger sum than the cost of a company program for the control of syphilis.

Let us not forget this as we discuss the hazards of syphilis: There is a silver lining to the problem. Treatment is specific, certain in results. It is long, but no other serious disease yields so definitely to the physician. All these hazards are unnecessary if syphilis is found through routine blood tests, if treatment is available and adequate.

Two years ago an advisory committee to the United States Public Health Service was formed to consider the establishment of State and local programs for venereal disease control. It included health officials and leading syphilologists. They sifted the experience of Sweden, Denmark, Great Britain, and leading States and cities of this country. They drafted a program which would serve as a blue print for States and municipalities which were setting up public health facilities for the attack on syphilis. From Social Security funds $8,000,000 had been set aside for public health activities. With new

funds available, States which had allowed venereal disease control to atrophy were rehabilitating their programs.

That program recommended, among other things, free laboratory service available to physicians and private medical services throughout the State. It should be possible, in any State with a well organized program, for industrial establishments to send their blood or dark-field specimens to a central State laboratory for analysis and report.

Such facilities are not yet universal. Where such State laboratories exist, they sometimes refuse to perform tests on the large scale required by industrial concerns. There are two answers which may be given: The service is an integral part of the State's program of venereal disease control. It is one which you may properly insist on, using every appropriate resource of pressure to secure it. On the other hand, with the great growth of interest in venereal disease control, many State laboratories cannot expand their facilities rapidly enough to meet these needs. If satisfactory contract arrangements cannot be made with private laboratories, the cheapest way to secure the performance of these blood tests would be the hiring of a technician to perform them in the company laboratory. It is work which would not, after the first few weeks, take the full time of the technician. There are, I believe, few medical staffs that could not make effective use of an additional laboratory worker of this type.

This is the solution to the problem applied by Dr. G. H. Gehrmann in Dupont's outstanding program of syphilis control. Tests were made by the company laboratory. Positive results were checked by second specimens and tests. If no definite history of the disease was found, positive tests were double checked by work in independent laboratories.

In Dr. Gehrmann's original program the men were then directed to consult their private physicians. The latter were supplied the necessary information with reference to the patient. But Dr. Gehrmann's experience with private treatment of syphilis was not always good. As some clue to what you yourselves may find—perhaps you have already found it—I will quote his own comments on the work. He says: "Each case has been followed persistently by the staff of the medical division to insure continuous treatment, and it is through this follow-up of employees who have been referred to their own physicians for treatment that so much has been learned of the difficulties which make the present plan of handling these cases seem unsatisfactory:

"The findings are enumerated:

"1. Very few refuse to take their treatment.

"2. Most physicians demand prices for treatment that are beyond the means of the individuals and out of reasonable proportion to their incomes. Some physicians maintain these high prices despite

the fact that they are receiving arsphenamine, neoarsphenamine, and bismuth free of cost from their State.

"3. Many physicians refuse to treat the referred cases, stating that no treatment is indicated, in spite of four plus Kahn and Wassermann reactions, although the cases have never received adequate treatment.

"4. Numerous physicians refuse to admit that their patients have syphilis (again in the face of four plus Kahn and Wassermann reactions). This group denies the validity of blood tests and states that they have known their patients for years, and further know that these same patients could not have contracted syphilis without their (the doctors') knowledge.

"5. On several occasions the attending physician has sent a blood specimen to a private or State laboratory and the report has come back that the reaction is negative. In every instance the results obtained by the company laboratory have been corroborated by subsequent check, but the attending physician has not always admitted that the patient has syphilis.

"6. Many cases are discharged as having had sufficient treatment, after 3 to 10 injections of neoarsphenamine without a heavy metal.

"7. Some have been reported as being well after a few mercury inunctions or a few intramuscular injections of water-soluble bismuth.

"8. Some are being treated with pills and nothing else.

"9. Treatment at the free clinics is very satisfactory, but it is not always possible for employees to conform to clinic hours and in some places the clinics refuse to treat any patient who is employed.

"The evidence [he refers here to the entire report] presented above indicates that the incidence of syphilis in industry is of sufficient extent to be well worth consideration both from the standpoint of public health and industrial risk. The problem of getting these cases adequately treated is extremely difficult, and the question arises, Is it advisable for industry to assume the entire obligation of treating these cases?

"There is no question that this work is well worthwhile, and there is no question about the adequacy of the treatment which the majority of these infected employees receive. But it does seem advisable for the industry to take over the entire management of these patients and thus insure to them continuous and proper treatment."

At some of the Dupont plants Dr. Gehrmann has, since that time, instituted the policy of treating employees suffering from syphilis. His reports would indicate the wisdom of the policy.

In conclusion I would like to revert to what industry may *expect* from State and local public health administrations. I need not discuss the administrative problems of the State and local health officers in detail. The details of these problems are their responsibilities, but there are some phases of syphilis control which the industrial

medical service finds it difficult to handle by itself. Where did the employee with syphilis acquire it? How shall that source of infection be prevented from infecting others? The responsibility of finding the source of infection and eliminating it before the disease is spread to others is largely a job for the public health authorities, and the industrial medical officer should expect and receive vigorous cooperation in such case finding. Most public health officials will be glad to cooperate in bringing to treatment infected members of the syphilitic's family or those who do not have access to industrial medical care programs.

I need hardly reiterate that the industrial surgeon should expect and receive effective, expert consultation on the problems of control. The industrial medical officer is contributing one of the most effective medical units to the public health battalions against syphilis. He should expect, before long, adequate facilities for his serologic tests to be available in every State. He should receive, along with every other physician, free anti-syphilitic drugs as part of the State program.

Where the industrial medical official does not receive this kind of cooperation, he should state his case clearly to his own management, to his medical organization, and to associations of business men who are coming increasingly to an understanding of this problem. With these as his allies, he should be able to secure action. He will find, in most cases where the health official has not cooperated, that it is a lack of administrative authority under the law or lack of funds that has made it impossible to cooperate effectively. Health officials will, I am sure, welcome such allies in educating legislators and the public in the problems of syphilis control.

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